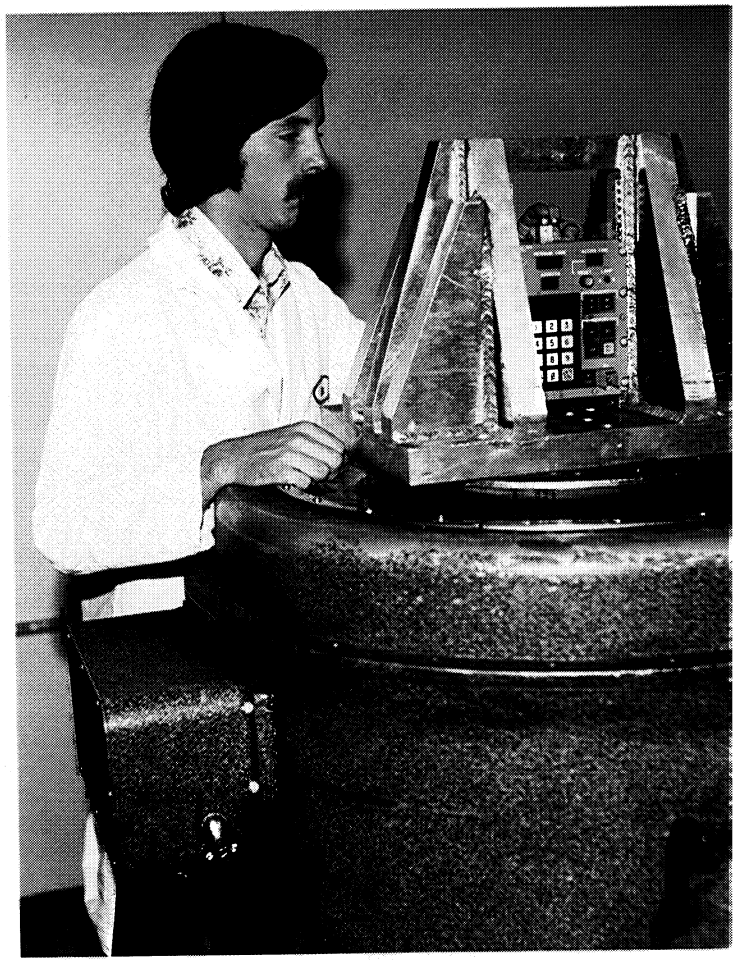
Equipment Analysis

At right, a military radio unit is undergoing vibration testing at Magnavox Government and Industrial Electronics Company, Fort Wayne, Indiana. In its research and development work, Magnavox has used the NASA Structural Analysis (NASTRAN)® computer program for vibration analysis of electronic equipment. The NASTRAN program, developed by Langley Research Center and supplied by NASA's Computer Software Management and Information Center (COSMIC), is used by many companies in hundreds of industrial applications. It is a general purpose program which mathematically analyzes a design and predicts how it will stand up under the various conditions of stress and strain it will encounter in operational service. This permits engineers to study the structural behavior of many different designs before settling on a final configuration.

At Magnavox, the NASTRAN program was originally used in the design stage of heavy aluminum fixtures for vibration testing. Electronic components, such as chassis and printed circuit boards, are mounted on the fixture and vibrated to determine the amount of vibration they can withstand. The NASTRAN program is also used to compare the resonant frequencies of the chassis and printed circuitry to predict whether failures may occur because of high vibration levels. Company engineers can then make design alterations to improve the equipment's vibration resistance. This method of analysis allows Magnavox to insure reliability and reduce the possibility of vibration-caused failure in such critical defense products as radios for aircraft and ground vehicles, airborne electronic warfare equipment, signal processors, sonobuoys and airborne antisubmarine warfare systems.

Magnavox uses another COSMIC software package—developed by Goddard Space Flight Center and called GENOPTICS, for General Purpose Optics Evaluation Program—in studies of hybrid optical systems. GENOPTICS was used in development of a Digital Optical Recorder, shown (bottom), which enables use of an optically-recorded disc to store and retrieve digital data. GENOPTICS is also used in company research and development of other optical systems. Magnavox reports that GENOPTICS provides more accurate results and that its use saved six man-months of time that would have been required to develop a comparable software package.



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